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**National survey of smoking and smoking cessation education within UK
midwifery school curricula**

Jane Forman RGN, RM, BSc, MSc, PGCE- Faculty of Health, Social Care and Education (HSCE) St Georges, University of London / Kingston University

James M. Harris RM BSc PGCert PhD – Florence Nightingale Faculty of Nursing and Midwifery, King's College London

Fabiana Lorencatto PhD MSc BSc – Centre for Health Services Research, School of Health Sciences, City University, London

Andy McEwen RN PhD – National Centre for Smoking Cessation and Training

Maria J. Duaso, PhD, MA, PGCert, RN-Department of Postgraduate Research
Florence Nightingale Faculty of Nursing and Midwifery, King's College London

Corresponding author – Jane Forman, j.forman@sgul.kingston.ac.uk

Abstract

Introduction: Smoking in pregnancy in the UK remains prevalent (11%). To encourage and support pregnant smokers to quit, midwives must be adequately trained to do so. Substantial curricular gaps have been identified in the smoking cessation training of medical, nursing and optometry schools. This study aimed to identify the extent of smoking cessation training and assessment in UK midwifery schools.

Methods: All UK undergraduate midwifery schools (n=53) were invited to complete a web-based survey of their curricular coverage and assessment related to smoking cessation, and perceived barriers to delivering smoking cessation training.

Results: Twenty-nine (55%) midwifery schools responded. Most teaching was completed in the initial year of study. All reported teaching the harmful effects of tobacco use. The majority of respondents (83%) reported training students in brief intervention delivery and ways to assist quit attempts. Only 24% of schools in this study included relapse prevention in their curriculum. The most frequently reported barriers to teaching smoking cessation were 'lack of knowledge amongst staff' (17%), 'no space in a crowded curriculum' (17%), and 'administrative problems' (13%).

Conclusions: Midwifery schools are teaching the harmful effects of smoking and providing training on brief interventions. However in some schools student midwives are not being sufficiently trained on relapse prevention or assessed in the practical skills necessary for delivering evidence-based based interventions.

Implications: Midwifery schools should revise the content and delivery of smoking cessation training to ensure midwives are equipped with the necessary knowledge and skills to contribute to the challenge of smoking cessation in pregnancy.

Introduction

Smoking is a significant cause of morbidity and mortality for both mothers and their babies^{1,2}. A UK national survey³ showed that 26% of women smoke in the year before their pregnancy and 10.6% smoke through to birth³, with international surveys showing similar prevalence⁴.

Pregnancy is a good time to intervene in changing women's health behaviours. Women remain highly motivated to make changes that will benefit their baby during pregnancy, and while the majority do give up smoking, up to 43% re-start smoking by 6 months postnatally⁵.

In the UK midwives are the main provider of maternity healthcare and are ideally placed to support healthy behaviour change⁶. The majority of midwives work within the National Health Service delivering maternity care to women under different midwifery care models. Over 99% of women giving birth in the UK will be cared for by midwives⁶. The midwife works in partnership with women delivering care throughout her pregnancy and postnatal period. This care includes preventative measures and health promotion and education, not just for the woman but also for her family, including smoking cessation interventions for pregnant women⁶.

The UK's National Institute for Health and Clinical Excellence (NICE) (2010) guidance on 'Smoking: stopping in pregnancy and after childbirth,' recognises midwives' crucial role in supporting pregnant women in smoking cessation. The guidance recommends that midwives routinely ask pregnant women about their smoking behaviour, refer them to specialist stop-smoking services if they disclose smoking and give advice about smoking behaviour and the harm it can cause to them and their babies. The guidance also recommends using a carbon monoxide (CO) monitor in all antenatal visits to verify smoking status along with a discussion about the harm caused by smoking and the benefits of quitting¹. The National Centre for Smoking Cessation and Training (NCSCT) in their 'Smoking Cessation: a briefing for midwifery,' recommends specific, evidence based

guidelines for delivering very brief smoking cessation interventions to pregnant smokers centred around Asking, Advising and Acting- or the 3 A's⁷. These very brief interventions (VBI) followed up by referral to stop smoking services have been shown to be the most effective way of supporting pregnant women to quit⁷. They are a behaviour modification based intervention⁸. Such behavioural interventions are particularly important smoking cessation strategies in pregnancy as there is insufficient evidence to determine whether or not NRT is effective in helping pregnant women to stop smoking^{1,9}. Caution is also advised in using non-nicotine replacement pharmacological smoking cessation support (i.e. varenicline, bupropion) due to lack of evidence of their safety in pregnancy and during breast feeding^{1,10}.

In order to deliver smoking cessation support effectively, midwives must first be knowledgeable and adequately trained to do so^{7,11}. Systematic reviews on pregnancy and smoking cessation interventions identified lack of knowledge as one of the factors that impeded success^{12,13}. One way to address this lack of knowledge is to improve the training of health care professionals for delivering smoking cessation interventions⁷. Issues related to smoking cessation training have been previously explored in the curricula of nursing, dentistry, dental hygiene, pharmacy and optometry schools both in the UK and internationally¹⁴⁻²⁰.

A survey of curricular coverage related to smoking cessation in UK undergraduate medical schools identified knowledge gaps and that the majority of students have received little or no training in the practical delivery of smoking cessation interventions¹⁷. Consequently, it is unsurprising that medical trainees reported feeling unprepared to give practical guidance to patients on smoking cessation¹⁷. These findings have been mirrored in similar surveys of UK nursing and optometry schools^{18,19}. It is currently unknown what knowledge- and skills-based training midwives receive in relation to smoking cessation, how they feel about these interventions, or indeed if they are even delivering them in the first place². It is important to examine the curricular coverage of smoking cessation interventions in training UK midwives to identify whether student midwives are being adequately trained to deliver these evidence-based, life- and pregnancy-

saving interventions to women. Therefore, the aim of this study was to examine smoking cessation education and training in midwifery schools in the UK.

Midwifery training in the UK has two routes of entry: a pre-registration midwifery programme consisting of no less than three years' full time training, or a post-registration programme for qualified adult nurses consisting of no less than 18-months full time²¹. Courses are required to be a minimum of 50% clinical practice within healthcare settings, and 40% theoretical practice within universities. Since 2008 the minimum academic level for registration as a midwife is a bachelor degree²¹.

The specific objectives of this study are to:

- Examine what topics are taught to midwifery students with regards to smoking and pregnancy
- Assess if midwifery students are taught to assist smokers to make an attempt to quit, including very brief advice
- Investigate if midwifery students are assessed or examined on this knowledge
- Identify how much teaching time is allocated to smoking cessation,
- To establish who is responsible for delivering smoking cessation training to midwifery students and who teaches it and how
- Ascertain perceived barriers to smoking cessation education from the perspective of the educators

Methods

Design

This was a descriptive, cross sectional survey conducted in May and June 2014.

Ethical Approval

Ethical approval was obtained from Kings College London's ethics committee before commencement.

Participants

The Nursing and Midwifery Council (NMC) is the regulatory body for all nurses and midwives working in Great Britain²¹. The NMC also set standards for education, and regulates the university courses. Every higher education institute that offers midwifery courses has a statutory requirement to identify a practising midwifery teacher as their Lead Midwife for Education (LME). Information about LMEs is readily available on the NMC website. This list was cross referenced with the Universities and Colleges Admissions Service (UCAS) to identify each institution that offered undergraduate midwifery courses. The five institutions that only offer postgraduate midwifery courses were excluded as all the students are qualified adult nurses, they have already been through a health degree which should have included some smoking cessation education, and therefore their needs are very different from undergraduate students who have had no previous training or education. Therefore a final sample of 53 LMEs/undergraduate courses were invited to participate in the current study.

Recruitment

The contact details of LMEs were obtained from the NMC website. LMEs were sent an email invitation explaining the study, including a hyperlink to the survey, and the participant information sheet as an attachment. The introductory email emphasised that participation was entirely voluntary. This was an opt in study and thus did not require a consent form. The LMEs were asked to nominate an appropriate member of staff to complete the survey. For non-responders, two reminder emails were sent 1 week and the 3 weeks after the initial invitation.

Materials

The survey was adapted from a survey developed by Richards et al to investigate smoking cessation education and training in UK nursing schools¹⁹. Permission

was obtained from the authors. Some of the questions were modified to reflect midwifery practice and NICE Guidelines¹.

Basic demographic data about the size of the student cohort and what country the university was based were included. The questions asked if smoking cessation was taught in the school and then looked at specific topics such as nicotine replacement therapy and asked if these topics were included.

Additional questionnaire questions addressed curriculum delivery: who was responsible for smoking-related teaching, what method they used and how many minutes of teaching were devoted to the topic. The last section asked about the assessment of students, perceived skills of the students in these topics and any perceived barriers to teaching tobacco related issues. The questionnaire used either direct yes/no questions or a Likert scale²². Please see supplementary information for the complete survey.

Three experienced midwifery lecturers were asked to review the survey for face validity and pilot the survey to consider if the instructions were clear, how long it took to complete and if there was any ambiguity in the questioning. Slight modifications were made based on their recommendations.

Procedure and analysis

The web-based survey was administered electronically, via the survey software Survey Monkey²³. A link to the survey was included in the original invitation email.

Raw data from Survey Monkey was transferred into an Excel spread sheet. Duplicate data were removed, and missing data were coded to allow for analysis. This data was then transferred to SPSS analysis. Data were summarised descriptively. Due to small number of responses some of the figures, such as time spent on delivery and number of students, were combined. Time spent on teaching was collapsed into less than 2 hours and more than 2 hours and number of students collapsed to less than 50 and more than 50.

Results

Response rate

After an initial 20 responses out of a possible 53, a first email reminder yielded a further 5 responses and a second email another 5 responses. One duplicate was removed from the analysis resulting in a total of 29 responses (i.e. response rate of 55%).

Topic included in the curricula

Are the harmful effects of smoking taught in the midwifery curriculum?

All of the schools reported teaching the harmful effects of tobacco use (Table 1). The topics most frequently reported as being taught were smoking in pregnancy (100%), SIDS (sudden infant death syndrome) (93.1%) and breastfeeding and smoking (93.1%) (Table 2).

Are midwifery students provided with information to assist smokers to make a attempt to quit including very brief interventions?

Most schools (82%) taught ways to assist a quit attempt, and reported training students in how to deliver brief interventions (86%) (Table 1). Twenty-four percent of schools reported including relapse prevention in their teaching (24%), and 28% taught students how to advise on stop smoking medications other than nicotine replacement therapy.

Are midwifery students assessed or examined on this knowledge?

Twenty-four percent of schools reported assessment of the students knowledge on smoking cessation throughout their training. The proportion of schools reporting using role play or simulation to test these practical skills for supporting smoking cessation was less than 7% (Table 2).

When asked to judge their students abilities at the point of qualification in key smoking cessation areas, the majority of respondents rated the skills as good. This included delivery of VBA (55.2%), advice on medications (41.4%) and delivery of behavioural support (37.9%) (Table 3).

How many minutes of teaching are allocated to smoking cessation and who teaches it and how?

Just over half (53%) of midwifery schools reported spending over two hours on smoking and smoking cessation throughout their programme. The majority of schools reported that teaching took place in the initial year of study whilst in a smaller proportion this was covered in subsequent years (Table 4). These figures were not mutually exclusive as some teaching was delivered across years. Most schools used both in-house members of staff (72%) and external speakers (68%) to teach smoking cessation.

When asked if a national remote learning / e-learning package was available for student midwives to gain knowledge on this topic, 75% of midwifery schools reported they would use it within their curriculum.

Are there any barriers to teaching smoking cessation?

Overall 34% of respondents reported that there were no barriers but when specifically asked, 17.2% agreed that lack of smoking cessation knowledge amongst staff and limited space in an already crowded curriculum posed significant hurdles (Table 5). The majority of respondents felt stakeholders viewed the training as important.

Discussion

To our knowledge, this is the first survey to look at midwifery schools smoking cessation education and its findings show that all the schools reported addressing the harmful effects of smoking in pregnancy in their curriculum, and over 80% said that they train students in how to deliver very brief advice. This is much higher than the reported surveys of other health schools¹⁴⁻²⁰. The majority also reported teaching how to assist women in making a quit attempt (such as

using nicotine replacement therapy or referral to a specialist smoking cessation service).

In comparison in 2013 a survey of UK medical schools found 90% of schools reported teaching medical students the harmful effects of smoking on health¹⁷ as opposed to the 100% of midwifery schools found in this survey. For nursing schools, 93% reported teaching the harmful effects of smoking on health¹⁹ and optometry 89%¹⁴. This finding may be due in part to the recognition that an important part of a midwives role is health promotion as identified in The Mint report²⁴ although other health professions also have a role in health promotion.

However, there are potential areas for strengthening the curricular coverage related to smoking cessation. For instance, relapse prevention was only included in 24% of schools in this study. This figure might be a reflection of the current lack of evidence on successful interventions in which to base the curriculum⁷. A recent systematic review of smoking abstinence in the postpartum period after a smoking cessation intervention during pregnancy showed that only 13% are abstinent at term and of these, 43% re-start by 6 months postpartum⁵. Calls have been made for better interventions but also for more intensive education on the factors that predict postpartum relapse and the importance of social support for smoking cessation²⁵.

The number of teaching hours is fairly low with only 10% teaching for over 300 minutes. Richards et al¹⁹ found that 18% of nursing schools taught smoking cessation for over 300 minutes and 22% of medical schools taught for over 300 minutes in their curriculum¹⁷. The ideal time for undergraduate curricula to devote to smoking cessation training remains unknown. However, work conducted by the NCSCT have shown that increased duration of training increases knowledge and competency, even at three-month follow up tests. This includes both face-to-face²⁶ and online²⁷ training packages, with best results following a two-day training course.

The respondents' confidence in midwifery student's ability to deliver very brief intervention was high in this study, with over two thirds saying that students' ability was good or excellent. This is a promising finding and is in contrast to other

health programs such as optometry where the respondents' confidence was much lower¹⁸. However given the lack of formal examination of their knowledge it is hard to know how they measured this confidence in their students' ability. Almost none of the schools examined their students' knowledge and skills in any formal manner, a finding replicated across other health care professions¹⁴⁻²⁰. Without formally examining acquired knowledge it is hard to actually assess the different methods of teaching¹⁹ and be confident that the midwifery students are being adequately prepared to effectively deliver smoking cessation advice.

Their confidence in midwifery students' ability to deliver advice on medications for smoking cessation was lower, with under half saying that students were good at this aspect of practice. This is reflected in the midwifery curriculum where teaching on pharmacological aspects of smoking cessation was reported as one of the lowest taught subjects. While NICE guidelines do not expect all midwives to deliver this advice, midwives should be knowledgeable of the use and contraindications of NRT and other pharmacological smoking cessation support to pregnant and breast feeding women¹. This is particularly important if clients do not wish to be referred to smoking cessation specialist services so appropriate advice is given.

When asked about barriers to smoking cessation most respondents did not consider a crowded curriculum as a concern, which contrasts with findings around undergraduate nursing programmes¹⁹. Most of the teaching was didactic in nature. Although some schools in this study seem to use clinical scenarios, the majority of respondents did not indicate using reflection or experiential learning approaches such as role play or OSCEs (an objective structured clinical examination).

In the majority of midwifery schools a member of the team delivered smoking cessation education alongside an occasional external speaker although a third of respondents agreed that there is a lack of knowledge of smoking cessation amongst their staff. This is of a concern as it raises questions about how prepared faculties are to teach this important topic.

There have been calls for the Nursing and Midwifery Council (NMC) to set specific requirements for mandatory education on smoking in pregnancy and brief intervention training for all midwives be provided as part of their pre-registration training and continued professional development². The NCSCT has now developed an e-learning course on delivering very brief advice (VBA) on smoking to pregnant women, including carbon monoxide (CO) screening to increase knowledge and confidence in the skills and language in supporting women who are smoking²⁸. This targeted, specialist training programme could be adopted by midwifery schools to tackle some of the shortfalls in curriculum coverage found in this study. Our survey results suggest that the majority of midwifery schools would be willing to incorporate such an e-learning package.

This study had some limitations. The survey did not include information on cutting down during pregnancy or education on e-cigarettes, both areas that future research should consider. There was no information collected on the quality or delivery of either teaching or the resources used, and since this is likely to vary from school to school it makes direct comparisons between the schools much more difficult. Lead Education midwives answering the questionnaire may not be fully aware of all the teaching that is delivered in their schools. Although respondents are asked about specific teaching, such as very brief interventions, there was no information collected about what they understood this to mean and so may have been interpreted in different ways by different respondents which also weakens the generalisability of this study²⁹. The response rate was relatively low at 55%. We are unable to ascertain whether respondents were more likely to have an interest in smoking cessation, or to have biased recall about smoking related teaching in their courses.

Conclusions

Smoking remains the single most preventable cause of morbidity and mortality both for mothers and their babies^{1,2} and any interventions that support women with smoking cessation will help save lives^{2,7}. Midwives are the main provider of antenatal and postnatal care and are ideally placed to tackle smoking in pregnancy⁶. This survey suggests that midwifery schools in the UK are teaching the harmful effects of smoking and providing training in brief interventions however there are some areas where curricular coverage could improve such as practical skills and relapse prevention.

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Declaration of Interests

Andy McEwen has received travel funding, honorariums, and consultancy payments from manufacturers of smoking cessation products (Pfizer, Novartis, and Glaxo Smith Kline) and hospitality from North51 who provide online and database services. He also receives payment for providing training to smoking cessation specialists, receives royalties from books on smoking cessation, and has a share in a patent of a nicotine delivery device. All other authors have no conflict of interest to declare.

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Table 1. Smoking cessation and training in UK Midwifery curricula

Areas of knowledge	Yes	No	Don't know
	%	%	%
Harmful effects of smoking	100.0 (29)	0.0 (0)	0.0 (0)
How to deliver brief interventions	86.2 (25)	6.9 (2)	6.9 (2)
Ways to assist smoking women to make a quit attempt	82 (24)	10.4 (3)	6.9 (2)

Table 2. Specific topics included in the midwifery curriculum

Education	%
Smoking in pregnancy	100.0
SIDS (sudden infant death syndrome)	93.1
Breast feeding and smoking	93.1
Effects of smoking on fetus	89.6
The role of stop smoking services	83.0
Use of CO monitoring in pregnancy	82.7
Benefits of smoking cessation prior to birth	82.7
Determinants of smoking	76.0
Nicotine replacement therapy	75.0
Contents of tobacco smoke	72.4
Passive smoking	72.4
Advise on smoking preconceptually	68.9
Demographics of smoking	67.0
Cancer risk	65.5
Cardiovascular health risks	65.5
Harm reduction	62.0
Nicotine withdrawal symptoms	55.0
Interventions to reduce exposure to second hand smoke	51.0
Cost and clinical effectiveness of stop smoking interventions	48.0
Pharmacology of nicotine addiction	38.0
Population strategies	34.0
Smoking and mental health	31.0
Other pharmacological agents	28.0
Relapse prevention	24.0
Skills based learning	
Practical delivery in clinical settings e.g. observing a stop smoking practitioner	48.2
Practical delivery in artificial settings e.g. role play	6.9

Table 3. Graduates' ability to deliver smoking cessation interventions

	Excellent	Good	Fair	Poor	Not applicable
	n(%)	n(%)	n(%)	n(%)	n(%)
Delivery of very brief advice to quit smoking	7 (24.1%)	16 (55.2%)	5 (17.2%)	0 (0%)	1 (3.5%)
Advice on medications for smoking cessation	1 (3.5%)	12 (41.4%)	10 (34.5%)	4 (13.8%)	2 (6.9%)
Delivery of behavioural support for smoking cessation	4 (13.8%)	11 (37.9%)	9 (31%)	4 (13.8%)	1 (3.5%)

Table 4. Duration and timing of smoking cessation training

	%
Reported minutes of smoking cessation training	
<60 minutes	10.1%
61-120 minutes	35.7%
121-300 minutes	42.8%
>301 minutes	10.7%
Timing of provision within the midwifery curricula	
First year	79%
Second year	51%
Third year	44%
Don't know	0%
Type of training	Number of schools
E-Learning	7
Face to face seminar	9
Face to face lecture	23
Clinical scenarios	16
Don't Know	1

Table 5. Reported barriers to teaching smoking cessation

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	n(%)	n(%)	n(%)	n(%)	n(%)
There are no barriers	8(27.6)	10(34.5)	5(17.2)	6(20.7)	0(0.0)
Administrative problems	0(0.0)	4(13.8)	4(13.8)	10(34.5)	11(37.9)
No space on crowded curriculum	1(3.4)	4(13.8)	2(6.9)	12(41.4)	10(34.5)
Lack of smoking cessation knowledge amongst staff	0(0.0)	5(17.2)	6(20.7)	13(44.8)	5(17.2)
Inconsistent government policies make it difficult to identify what should be taught	0(0.0)	3(10.3)	8(27.6)	13(44.8)	5(17.2)
It is not clear who should teach smoking cessation	0(0.0)	3(10.3)	8(27.6)	13(44.8)	5(17.2)
There are insufficient funds to include this in the curriculum	0(0.0)	3(10.3)	8(27.6)	13(44.8)	5(17.2)